

Ratio Working Paper No. 128

Institutional Ownership and the Returns on Investment

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Abstract

By examining a large number of Swedish listed firms, we analyse how institutional and foreign owners affect investment performance. To measure investment performance Mueller and Reardon's (1993) marginal q is used, although derived directly from Tobin's average q . Marginal q measures the ratio of the return on investment to the cost of capital. Our findings show that both domestic and foreign institutional owners positively influence firm performance. Furthermore a non-linear relation between institutional ownership concentration and performance is found. This is consistent with positive incentive effects and negative entrenchment effects. During the last decades the ownership structure of Swedish firms has undergone dramatic changes: institutional and foreign investors have been increasing their stakes, whereas Swedish households have decreased in importance. Controlling owners, often founding families, remain in control by resorting to an extensive use of dual-class shares. The practice of dual-class shares which separates cash-flow rights and control rights is also found to be an important determinant of firm performance that eradicates the positive influence of institutional ownership.

JEL Codes: G 30, C 23, L25

Keywords: Corporate governance, institutions, ownership, performance, Tobin's q , marginal q .

¹ Financial support from Sparbankernas Forskningsstiftelse to Daniel Wiberg's and Johan Eklund's dissertation work is gratefully acknowledged, together with financial support from Torsten and Ragnar Söderbergs Foundation for Per-Olof Bjuggren's research. A research grant from the Ratio Institute and the Marcus and Amalia Wallenberg Memorial Fund Foundation and support from the Centre for Excellence for Science and Innovation Studies (CESIS) is also gratefully acknowledged.

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Introduction

Over the last decades the role of institutional and foreign investors has grown dramatically. The growing importance of this kind of investors has been coupled with an increased interest in the role and effect's of this "anonymous-capital". These institutional investors, both foreign and domestic, are often called upon to solve and minimize the managerial discretion problems through their role as large and influential owners (Demsetz, 1983 and Shleifer and Vishny, 1986). The central question is whether institutional investors, aggravate or reduce managerial discretion problems in listed firms?

One problem with institutional investors as owners is that they often own relatively small stakes in the individual firms in their investment portfolios. This provides weak incentives to actively exercise corporate control³. Furthermore, it is sometimes argued that even though they might exert substantial pressure on managements, the costs of monitoring often seem to outweigh the benefits.

This paper provides empirical evidence on the impact of ownership on firms' investment performance. In particular the influence of domestic institutional and foreign owners is investigated. An additional question addressed in the paper is how dual-class shares relate to ownership and firm performance. Similar studies have used measures' of Tobin's average q , as a measure of firm performance (Morck et al (1988), Demsetz and Lehn (1985), Agrawal and Knoeber (1996), Loderer and Martin (1997), McConnell and Servaes (1990), Himmelberg et al (1999), Cho (1998), Demsetz and Villalonga (2001), Dahlqvist and Robertsson (2001), Cronqvist and Nilsson (2003)). For an extended survey see Gugler (2001). However, Tobin's q has some drawbacks. For the purpose of testing investment efficiency a marginal performance measure is more appropriate (Gugler and Yurtoglu, 2004). This paper adopts such a performance measure, marginal q , as developed by Mueller and Reardon (1993). This measure gives the ratio of a firm's return on investment to its cost of capital.

A distinctive feature of the Continental European corporate governance system, and particularly the Swedish one, is the strong concentration of ownership (Agnblad et al. 2001). Pyramids, cross-holdings and dual-class shares are three common methods used to maintain ownership whilst attracting new capital. In Sweden this has produced remarkable persistent ownership structures, in combination with a relatively vital capital market. As in most Continental European countries, large commercial banks have played, and still play, a fundamental role (Högfeldt, 2004). These factors make Sweden an interesting case when the impact of ownership on firm performance is investigated. The main contribution of this paper is that we provide empirical evidence on the effect of institutional ownership on firms' investment performance. Using the marginal q as a measure of performance, rather than Tobin's average q , we are able to reduce some of the usual problems of omitted variables and reverse causality. By investigating a sample of Swedish listed firms we also present evidence on a negative relation between dual-class shares and investment performance.

The remainder of the paper is organized in seven sections. Section 2 gives a short description of the Swedish corporate ownership structure. In section 3 institutional

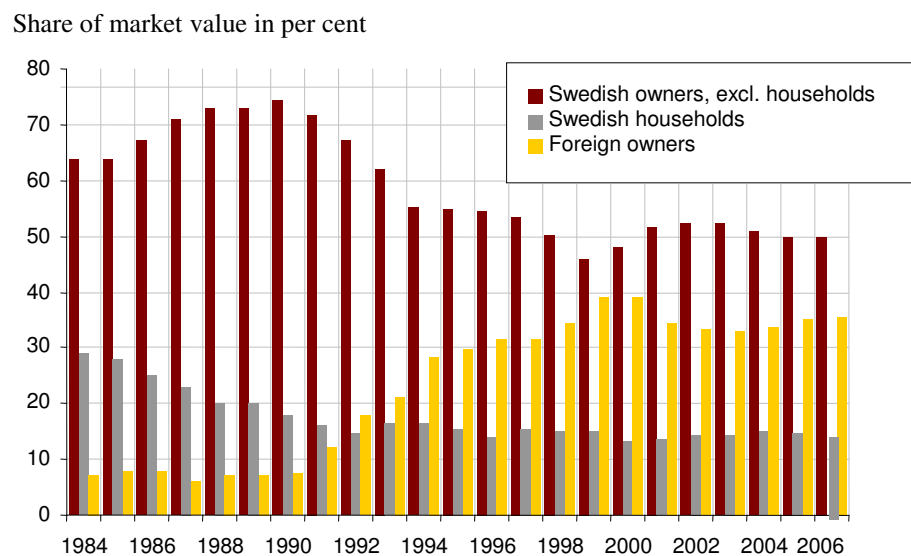
³ For an excellent survey of shareholder activism, see Gillian and Starks (2000).

investors are discussed. From this discussion we also formulate our hypothesis about how they affect firm performance. Methodology and derivation of the marginal q measure are given in section 4. Variables and descriptive statistics are presented alongside a discussion about the data in section 5. Section 6 deals with the empirical results and analysis. Conclusions end the paper in section 7.

Corporate Ownership in Sweden

Following the repeal of restrictions on foreign ownership in 1993, foreign investors have bought into the leading Swedish companies on a large scale. Currently foreigners own around one-third of the outstanding equity on the Stockholm Stock Exchange (Statistics Sweden, 2006), see Figure 1. During the same period, changes in the Swedish pension system have made substantial amounts available for private financial institutions to invest on behalf of the Swedish population. Domestic institutional and foreign owners are thus becoming the dominating owners in Sweden, accounting for about 85 per cent of the stock market capitalization.

Figure 1. Ownership of shares listed on a Swedish Stock Exchange



Source: Swedish Financial Supervisory Authority

With a stock exchange dominated by a few very large firms, the Swedish corporate governance system seems to have been remarkably successful in generating large, internationally competitive firms. Most firms, even many large firms, are often closely held by a family. The main instruments to maintain control in the Swedish firms are dual-class shares (Angblad et al., 2001) combined with pyramidal holding companies (closed-end investment funds). Sweden is in fact among the few countries that are characterised by an extensive use of both dual-class shares and pyramidal ownership (La Porta et al., 1999). A study that demonstrates the relevance of ownership structure in the allocation of firms' resources is Alonso et al., (2005). They use a dataset, similar to this study, of 101 large non-financial publicly-traded Spanish firms and also a similar panel-data approach. However, the study takes no account of any formal separation between capital ownership and vote control. Cronqvist and Nilsson (2003) analyze the impact of controlling shareholders' voting rights on

Tobin's q , for a panel of Swedish listed firms during 1991-1997. Their results show a negative effect of controlling shareholders votes on Tobin's average q . The wedge between votes and cash flow rights is however found to be statistically insignificant.

Proponents of the Swedish governance system often argue that significant ownership stakes and control in the hands of one or few owners is vital in order to create correct incentive structures of entrepreneurs and managers. There is however no research which gives support to these claims.

Equity stakes may tilt insiders such as managers and controlling owners' incentives towards the pursuit of share-value maximizing strategies. However, ownership concentration could also lead to expropriation of outside minority shareholders, as shown by Jensen and Meckling (1976). Thus, large voting stakes held by insiders may not necessarily lead to performance improvement. In fact, McEachern (1975) argues that large shareholdings in the hands of the insiders (managers) might actually deteriorate the performance of the firms. Since then more studies supportive of this claim, such as Morck et al., (1988) and Gugler et al., (2002), have been carried out on the relationship between managerial ownership and firm performance.

Another effect of the Swedish corporate governance model, with its strong separation of ownership and control, is that it locks in owners for long periods of time. The widespread use of dual-class shares and pyramid structures can thus have substantial costs in terms of loss of dynamics in ownership and control. Due to these minority control arrangements hostile takeovers for example are very rare. Moreover, the costs of rising outside capital may significantly constrain growth opportunities open to the Swedish firms.

Institutional Investors

A feature common to all institutional investors is that they provide a form of risk pooling for small investors, hence providing a better trade-off of risk and return than what is achievable via direct holdings. Today, different kinds of institutional investors deal with various markets and clients, and for various purposes. Many act on several markets simultaneously and the competition is fierce for market shares and clients. Hence, institutional investors are far from a homogeneous group. They differ in terms of contractual relations between the owners of the assets and the asset managers, in the rules determining the distribution of risk and return, as well as in the definition of their liabilities. The institutional investors this paper is concerned with can be summarized as pension funds, life insurance companies, and mutual funds.

One factor favouring institutional investors relative to individuals is their ability to absorb and process information. In many cases it is this informational advantage that the consumer pays for. This advantage has also given rise to the expression "informed investors" which distinguishes this type of professional investor from the average individual. However, the information advantage might be large or small depending on the type of institution, and the type of information.

With the size of many institutions also follows the potential for improved control over companies in which they invest. Hirschman (1970) shows how "exit and voice" behaviour might work to reduce moral hazard problems. Berle (1960) also argues that

institutional investors might discipline managers through their importance as market participants; he describes this as “power without property” (Mueller, 2003). Institutional owners might for that reason be well apt to minimize the problems associated with the separation of ownership and control, originally presented by Berle and Means (1932).

It is important to note that the institution in itself suffers from the same incentive problems between its owners and managers. This kind of incentive problems may also arise between other parties related to, and within, the institution; for instance, between the board of directors and the asset management. This leads us to another characteristic of the institutional investors, the asset management.

There are different incentive problems in the asset management relationship. On the one hand, it gives rise to an essentially fiduciary relationship to the ultimate investor, a relationship that often entails a degree of caution in the portfolio strategy and a desire to limit risks incurred. On the other hand, such delegation raises principal-agent problems. So, unless the fund manager is perfectly monitored and/or a perfect contract is drawn up, the fund manager may act in his or her own interests (e.g., in generating excessive commission income) or in the interest of financial institutions related to them. These objectives may even be contrary to those of the liability holders or at least not direct in line with their interests (Davis and Steil, 2001).

Despite the very high percentage of the total market capitalization controlled by institutions, institutional investors are not major players from an ownership perspective (Goergen and Renneboog, 2001). Although their accumulated shareholdings are significant, shareholdings in individual companies are often small (an explanation to this is that institutions more than others invest in large companies. Gompers and Metrick (2001) have provided evidence that this is the case in the U.S. stock market). In the Swedish listed firms the aggregate institutional shareholdings are on average around ten percent. Hence the potential benefits from active monitoring can hardly outweigh the costs for institutional investors. This prompts institutions to free ride on corporate control (Shleifer and Vishny, 1997, Dahlqvist and Robertsson, 2001). Furthermore, some institutional investors, such as certain mutual funds, invest in accordance with low-cost passive strategies and thus lack the resources for active monitoring of the large number of companies in their portfolios. In order to remain cost-efficient, rather than engage in active monitoring, institutional investors prefer to simply “exit” and sell off poorly performing firms. The crucial question is therefore whether or not the potential benefits from monitoring outweigh the costs of doing so.

Another reason for the low institutional involvement in corporate governance issues is insider-trading regulations (Goergen and Renneboog, 2001). If the institutional investors do not want to immobilize parts of their portfolios, they might have to restrict active involvement in corporate strategies.

The discussion above shows that a negative relationship between institutional ownership and firm performance is likely. But there are also many reasons to expect that the relationship is actually positive.

As institutional investors are constantly being evaluated by how well they succeed in creating shareholder value (Thomsen and Pedersen, 2000), there is not much room for

catering to other objectives (as far as competition works as a stick). In this sense the incentives, to use “exit or voice” in value-increasing manner, are probably stronger than for other types of owners. That is, in spite of comparatively low ownership stakes, the focus of institutional investors is predominantly on shareholder value.

Furthermore, risk aversion is less likely to play a role in the governance actions of institutional owners. Risk diversification characterizes institutional owners to a larger extent than other ownership categories. Therefore they can be argued to have a more positive view of risky projects with a higher net present value. Considering these two aspects as well as favourable financing conditions, we expect, similar to Thomsen and Pedersen (2000), a positive relation between institutional ownership and investment performance.⁴

As most foreign investors are in fact institutions (Sundqvist, 2006) we expect the same effect on firm performance as for domestic institutional investors. In line with Thomsen and Pedersen (2000) we therefore hypothesize that domestic institutional and foreign owners will use the influence that goes along with increasing ownership shares in a value increasing manner, i.e.

Hypothesis 1 (H1): Domestic institutional and foreign ownership has a positive impact on investment performance.

Most likely this potentially positive effect will be diminishing. This notion has also been widely supported by previous literature (see amongst others Morck et al., 1988; McConnell and Servaes, 1990; and Gedajlovic and Shapiro, 1998; Pindado and de la Torre (2006); Miguel et al., (2004)). We therefore expect that the impact of institutional ownership on firm performance is non-linear (marginally diminishing). Assuming that most of the positive effects occur at a given threshold of ownership concentration, it is plausible to assume that this effect will not continue to increase linearly as ownership increase further. Hypothesis two is therefore:

Hypothesis 2 (H2): Investment performance will increase at a diminishing rate with increasing domestic institutional and foreign ownership share.

There are also some studies that have investigated institutional ownership and vote differentiated shares i.e. Bjuggren, et al., (2007) and Gompers and Metrick (2001). A working paper by Li et al., (2006) also addresses this issue. They find for U.S. data that institutions have smaller ownership stakes in firms with vote differentiated shares. Furthermore Li et al., (2006) find that institutional owners to a larger extent “exit” this type of firms. Their findings give an extra explanation to the arguments put forward in (Bjuggren et al., 2007) on why the existence of vote differentiated shares are likely to have a negative impact on investment performance. In a market where this type of control instrument is allowed, it is consequently important to control for this effect. Since the incentive structure and the ability to exert control are altered when vote rights are separated from cash-flow rights by vote-differentiated shares, we expect an impact on the ability of institutional owners to exert control:

⁴ See also Nickel et al., (1997), McConnell and Servaes (1990) and Levin and Levin (1982).

Hypothesis 3 (H3): Separation of cash-flow rights from control by use of dual-class shares will reduce the effects domestic institutional and foreign ownership has on firm performance.

Given the negative view of vote-differentiated shares, an explanation has to be provided why these types of share are bought by institutional investors. Gompers and Metrick (2001) find that institutions invest in liquid stock. For many Swedish companies with A- and B-shares it is only the B-shares that are regularly traded. We therefore expect that institutional and foreign owners primarily invest in capital-shares.

Methodology

To test the impact of institutional ownership on firm performance we estimate the firms' marginal q (Mueller and Reardon, 1993). The marginal q is essentially a marginal version of Tobin's average q. This is a more correct measure to use when evaluating firm performance since it is the return on the marginal investment rather than the average that shows whether the firm is over- or under-investing relative to its cost of capital.

Marginal q can be derived from Tobin's q, where Tobin's average q, q_a , is defined as the market value, M_t , divided by the replacement cost of the firm capital at time t , K_t :

$$M_t / K_t = q_{a,t} \quad 1)$$

This measures the average return on the capital over its cost of capital. If q_a is above one this implies that the firm should be investing further. However, for adjustments of the capital stock the marginal return on capital is more relevant. Marginal q measures the marginal return on capital, i.e. investments. Marginal q, q_m , can be derived from Tobin's average q. The marginal return on capital is then:

$$q_m = \frac{\Delta M_t}{\Delta K_t} = \frac{M_t - M_{t-1} - \delta M_{t-1}}{K_t - K_{t-1}} \quad 2)$$

where $-\delta$ is the depreciation rate. Since the market value in period t can be written as:

$$M_t = M_{t-1} + PV_t - \delta M_{t-1} + \mu_t \quad 3)$$

where PV_t is the present value of the cash flows that investments in period t , I_t , generate, and μ_t a standard error term. The net present value rule of investments stipulates that investments should be made up to the point where $PV_t = I_t$. This implies $PV_t/I_t = 1$, which can be rewritten as $PV_t/I_t = q_m$. By dividing both sides of equation 3 with M_{t-1} and rearranging, we get the following empirically testable equation:

$$\frac{M_t - M_{t-1}}{M_{t-1}} = -\delta + q_m \frac{I_t}{M_{t-1}} + \frac{\mu_t}{M_{t-1}} \quad 4)$$

Equation (4) assumes that the capital market is efficient in the sense that future cash flows are unbiased estimates. As t grows larger the term μ_t/M_{t-1} will approach 0.

The marginal q , q_m , has a number of advantages. Above all a marginal performance measure is more appropriate than an average Tobin's q , when testing hypotheses about managerial discretion, since average measures of performance confuse average and marginal returns. Secondly, q_m has a straightforward interpretation. In Figure 2, i is the return on investments, r is the cost of capital, I is investments, and $q_m = (i/r)$ is marginal q . If managers invest in a project that yields a return that is less than the cost of capital, $q_m < 1$, which means that managers are over-investing ($q_m < 1$ see Figure 2). That is, the marginal investment has a return less than the cost of capital and the shareholders would have been better off if the firm had distributed these funds directly to them instead. For the firm to maximize shareholder-value, q_m must be equal to one. Conversely, if $q_m > 1$ managers are not making enough investments. This means that the marginal investment has a return in excess of the cost of capital and that the firm should have invested more ($q_m > 1$ in figure 2).

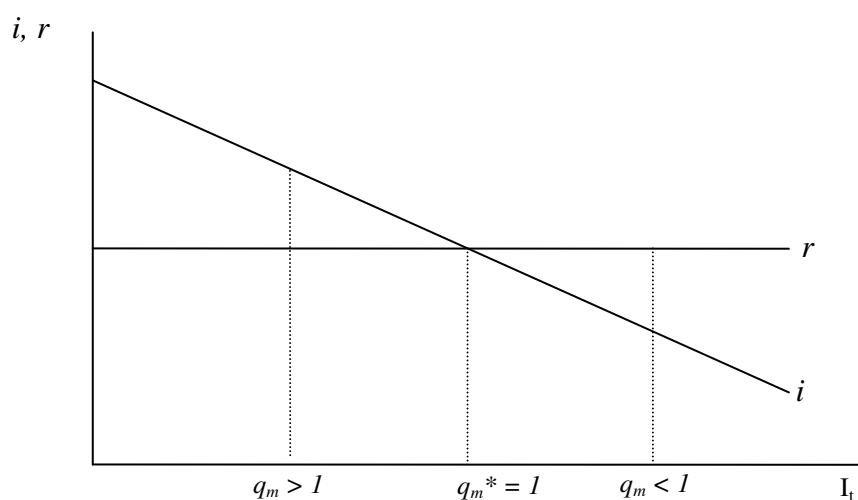


Figure 2. Marginal q and the cost of capital

To estimate equation (4) we need data on the market value of firms and their investments. The market value of a firm is defined as all debt plus the total value of all its outstanding shares at the end of t .

According to the originators, Mueller and Reardon (1993), investment is measured as: $I = \text{After tax profits} + \text{Depreciation} - \text{Dividends} + \Delta\text{Debt} + \Delta\text{Equity} + R\&D + \text{ADV}$, where ΔD and ΔE are funds raised using new debt and equity issues. $R\&D$ and ADV (advertising expenditures) are also forms of investment, which may contribute to a company's market value and they are therefore included in the investment function.⁵

⁵ The data collected from Compustat Global have following mnemonic item: *MKVAL* (market value), *DVT* (total dividends), *DT* (total debt), *SSTK-PRSTKC* (new equity), *XRD* (R&D) and *XSGA* (approximation of adverting and marketing expenditures).

Data and variables

All data on the firms' market values and investments are provided by *Standard and Poor's Compustat Global* database. The period covered by the data is 1999 until 2005. The time period covered in the regressions is 2000-2005, due to the first difference in the dependent variable. In order to study the same individual firms for several periods, all firms had to provide data for at least three subsequent years. Furthermore, financial firms were removed from the sample due to the particular nature of their investments. The ownership data is provided by *SIS Ownership Corp* (SIS-Ägarservice AB), which is a unique database covering ownership structure, on a yearly basis, on all firms listed on one of the three major lists at the Stockholm stock exchange.⁶

All things considered, the set-up requirements produced a sample of 110 Swedish firms. The sample firms correspond to an aggregate share of more than 85 percent of the total market capitalisation at the Stockholm Stock Exchange, and approximately 75 per cent of the total Swedish export value.

The variable institutional ownership is made up of the aggregate ownership controlled by institutions, both in terms of cash flow rights (IC) and vote rights (IV).⁷ Belonging to this group of institutional owners are: banks, pension and mutual funds, insurance companies and endowment foundations. The different ownership categories and how they are defined and grouped are summarized in Table 1.

Table 1. Ownership Categories

Category	Definition
<i>Private</i>	All firms controlled by individuals as well as other firms. The private owner can either be the founder of the firm or an investor who has acquired control. ^A
<i>Foreign</i>	The category refers to companies controlled by a foreign owner. This owner can be an institution as well as an individual since it is hard to separate these two groups with certainty. The majority of these foreign owners are financial institutions of different kinds.
<i>Institutional</i>	All companies controlled by a Swedish financial institution belong to this category. In all cases the institutions belong to one of the three following types. <i>Insurance company</i> Insurance company-controlled companies are all firms that have an insurance company as their largest owner. Note however that mutual funds belonging to an insurance company make a separate group of controlling owner. <i>Mutual fund</i> As the name indicates, all companies controlled by a mutual fund; a fund can either belong to a bank; an insurance company or the state-owned pension funds. <i>Foundation</i> This category includes foundations donated by private individuals as well as, for example, various types of profit-sharing funds and pension funds tied to individual companies.

⁶ These firms have all reported their ownership structure to VPC (Nordic Central Securities Depository), which operates under the supervision of the Swedish Financial Supervisory Authority and functions as a central securities depository and clearinghouse.

⁷ The same notation applies for foreign ownership (FC) and (FV).

^A Although no firm in the sample had a bank as a controlling owner this category would include companies directly controlled by one of the Swedish banks. This category of owners also includes the typical Swedish closed-end investment funds (CEIF's), i.e. *INVESTOR Ltd*. These CEIF's function as holding corporations for Swedish ownership spheres, and can be characterised as having objectives different from what is usually referred to by institutional owners.

A list of the variables used in the regressions, together with their definitions, is provided in Table 2.

Table 2. Variables

Variable name	Definition
$M_t - M_{t-1} / M_{t-1}$	Change in total market value
I_t / M_{t-1}	Investments normalized by market value in previous period
C1	Share of capital owned by the largest owner (cash-flow rights)
V1	Voting rights controlled by the largest owner
FC	Share of capital owned by foreign investors
FV	Voting rights controlled by foreign investors
IC	Share of capital owned by institutional investors
IV	Voting rights controlled by institutional investors
Votes minus Capital, (V1-C1)	Votes controlled by largest owner minus votes related to capital share held by largest owner.
VoteDifferentiation	Dummy variable for vote-differentiated shares. 1 if dual-class shares, 0 if one-share-one-vote.
Sales	Total sales (millions SEK)

Descriptive statistics for the variables in the regressions is provided in Table 3. In addition to the variables used in the regressions descriptive statistics of the firms' sales/turnover are provided in Table 3.

Table 3. Descriptive statistics

	Mean	Std. dev.	Min	Max	Observations
$M_t - M_{t-1} / M_{t-1}$	0.128	0.468	-0.941	2.874	651
I_t / M_{t-1}	0.316	0.382	-1.118	3.539	651
C1	23.41	15.51	1.0	74.5	651
V1	35.69	20.22	2.5	89.5	651
FC	21.50	18.36	0.3	91.1	651
FV	18.79	19.19	0.1	93.5	651
IC	13.99	12.00	0	55.5	651
IV	10.65	10.42	0.1	54.9	651
IC plus FC	35.49	21.48	0.3	94.2	651
IV plus FV	29.44	22.15	0.2	94.2	651
V1 minus C1	12.74	12.50	0	49.1	651
Sales	13189.4	31688.5	0.04	250780.7	651

It is interesting to note the share of control rights controlled by the largest shareholder, V1. On average, the largest shareholder in the sample controls 35.69 per cent of the votes in the firm, see Table 3. This concentrated ownership is, as mentioned in the introduction remarkable, not only because of the relative level compared to other European and Anglo-Saxon countries, but also because of the relative size of the Swedish firms in the sample (mean sales SEK13,189.4 million). The sample of firms is therefore consistent with the view that the Swedish economy to a large extent is dominated by closely held, relatively large, often old industrial and multinational firms (Agnblad et al., 2001, Högfeldt, 2004, Henrekson and Jakobsson, 2006).

When considering cash flow-rights (C1), the share controlled by of the largest owner is on average 23.41 per cent, substantially lower than the vote rights (V1=35.69%), but still relatively high in an international comparison. When looking at the combined holdings of the five largest owners, they on average control 47 per cent of the capital and 60 per cent of the votes.

For the foreign and domestic institutional owners cash flow rights seem to be more important than control which is in line with our expectation. The ownership of vote rights (FV=18.79% and IV=10.65%) is substantially below the level of cash flow rights (FC=21.50% and IC=13.99%). For both ownership types the difference is around three per cent, which also support the hypothesis that the two ownership types are in fact very similar. That is, the overwhelming majority of the foreign owners are in fact institutions. The incentive structure and the influence of ownership on the performance should therefore be similar for foreign and domestic institutional owners.

The correlation matrix in Table 4 , see Appendix A, also confirms the negative relationship between both foreign and institutional ownership vis-à-vis control instruments such as vote-differentiation. It is interesting to note that the vote rights of the largest single owner (V1) are correlated with investments whereas capital rights (C1) are not. Furthermore, both domestic institutional and foreign capital is significantly correlated with sales.

Results and analysis

In order to test the impact of different types of owners a panel data estimation has been constructed. With an emphasis on data where the cross-sectional dimension is larger than the time dimension, a panel data model can be constructed to follow the same individual firm over the entire period. The major motivation for using a panel data model in this way is the ability to control for possibly correlated, time-invariant heterogeneity without observing it (Himmelberg et al., 1999).

When testing the functional relationship of ownership types and performance of firms one would then like to control for the firm or industry specific effects. We therefore use a fixed-effects model with time and industry effects. While ownership may differ significantly across firms, Zhou (2001) show that these changes in ownership (investigates managerial ownership) typically changes slowly over time within a company. By relying on within variation consequently, firm fixed effects estimators may not detect an effect of ownership on performance even if one exists. Other types of owners however, such as institutional owners, most likely alter their ownership stakes more often. Industry variation may also be substantial, making fixed effects models with industry effects viable as an alternative to firm effects. An unbalanced panel dataset consisting of 651 observations has been used for all the estimations.⁸

In the regressions the relative change in market value from period $t-1$ until t ($(M_t - M_{t-1})/M_{t-1}$) is the dependent variable. The ratio of investments in t to market value in $t-1$ (I_t/M_{t-1}) is used as an explanatory variable. In addition to the explanatory variable, interaction terms of I_t/M_{t-1} and relevant ownership variables (measured in percentages) are employed in order to test the effects of ownership concentration and vote-differentiation.

Thus, the equations estimated have the following general form: $Y = \beta_1 + \beta_2 X + \beta_3 XZ$, and the marginal effect (dY/dX) is therefore $\beta_2 + \beta_3 Z$ which in this case has the economic interpretation marginal q , q_m .

The equations are then estimated both in terms of cash-flow rights (Capital, C) and control rights (Votes, V), for each ownership type. The functional form of the impact of ownership on performance is then tested by incorporating the squared institutional or foreign ownership with I_t/M_{t-1} . The estimate equations are thus of the following form:

$$\frac{M_t - M_{t-1}}{M_{t-1}} = -\delta + \beta_1 \frac{I_t}{M_{t-1}} + \beta_2 Z_1 \frac{I_t}{M_{t-1}} + \dots + \beta_{i+1} Z_i \frac{I_t}{M_{t-1}} + \varepsilon_i \quad 5)$$

where Z_i represent explanatory variables. The marginal effect, q_m , of equation 5 is therefore:

⁸ The data set contain 110 firms over a period of 6 years. Of these 660 observations 9 were identified as outliers. These were deleted due to obvious errors in the data material.

$$q_m = \beta_1 + \beta_2 Z_1 + \dots + \beta_{i+1} Z_i \quad 6)$$

The intercept δ is, as noted earlier, the rate of depreciation and therefore not relevant for the interpretation of q_m ⁹.

For the overall sample, the estimated marginal q is 0.693, see Table 4 column A, which indicates an inefficient investment performance by the Swedish firms. In fact the estimated marginal q is remarkably persistent with previous estimations on Swedish data (q_m around 0.65), see Gugler et al., (2002), and Bjuggren et al. (2007). The estimates of marginal q are also robust with respect to the choice of estimation technique. Robust estimation methods such as quintile median regression and iteratively reweighed least square which control for non-normality and outliers generate estimates of marginal q very close to 0.70.

Table 4. Fixed-Effects estimation; Average Marginal q , interacted with Votes minus Capital (V1 – C1).

Dependent variable: ($M_t - M_{t-1}$)/ M_{t-1}	Column A	Column B
Constant, δ	- 0.082* (-3.36)	- 0.087* (-3.51)
I_t/M_{t-1} , q_m	0.693* (15.99)	0.759* (12.95)
Votes-Capital _{interacted} (V1 – C1)		-0.005*** (-1.67)
Average q_m	0.693	0.695
R^2	0.477	0.479
F-value	13.57	13.35
No. observations	651	651
No of firms	110	110

t-values in brackets

* indicates statistical significance at the 1 percent level, ** at 5 percent significance level, *** at 10 percent significance level

The use of vote-differentiated shares is expected to have a negative impact in all estimations. This effect is tested by taking the difference between vote rights and capital rights held by the largest owner (In a firm without vote-differentiated shares the largest owner will hold the same amount of vote as capital-rights). This difference is then interacted with I_t/M_{t-1} . The results show, see Table 4 column B, that vote-differentiation creates a wedge between vote rights and capital shares that is negative for performance. Firms without vote-differentiated shares have on average a marginal q of 0.759, whilst firms that do have a vote-differentiated share structure have a marginal q of 0.695 on average. The results confirm hypothesis 3, and also verify the findings in earlier studies on ownership structure, dual-class shares and performance, such as Bjuggren et al., (2007).

⁹ Note that when differentiating with respect to investments, I_t , the depreciation rate, δ , disappears, and hence has no relevance for the interpretation of q_m .

Table 5 presents regression results with domestic institutional ownership concentration, in terms of cash-flow rights (IC). The results in terms of control rights (IV) are presented in Table 6. The results support the hypothesis that institutional ownership has a positive and statistically significant effect on firm performance (H1). This relationship is also non-linear as expected (H2), controlling for non-linearity and vote-differentiation more than doubles the R^2 -values, suggesting that dual-class share affect the ownership-performance relationship substantially (H3).

Table 5. Fixed-Effects estimation; Institutional Owners' Capital Share (IC) controlling for Vote-Differentiation

Dependent variable: ($M_t - M_{t-1}$)/ M_{t-1}	Linear	Linear with VoteDifferentiation	Quadratic	Quadratic with VoteDifferentiation
Constant. δ	-0.083* (-3.38)	-0.083* (-3.37)	-0.083* (-3.42)	-0.088* (-3.56)
I_t/M_{t-1}	0.679* (12.98)	0.679* (12.97)	0.629* (10.44)	0.630* (10.46)
IC	0.001 (0.50)	0.002 (0.43)	0.012** (1.74)	0.023** (2.22)
IC ²	-	-	-0.0003** (-1.68)	-0.0006** (-2.19)
IC interacted with VoteDifferentiation dummy	-	-0.001 (-0.15)	-	-0.0147 (-1.43)
IC ² interacted with VoteDifferentiation dummy	-	-	-	0.0005 (-1.52)
Average q_m	0.693	0.693	0.738	0.727
R^2	0.217	0.478	0.229	0.482
F-value	13.24	12.95	13.03	12.51
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 1 percent level, ** at 5 percent significance level,

*** at 10 percent significance level

Looking at vote rights (IV) (see Table 6), institutional ownership is again significantly positively related to the performance of the firms, which supports hypothesis 1. As stated earlier the relationship is found to be non-linear, which indicates a positive but diminishing effect of institutional ownership. The estimations are also remarkably robust for both types of shares, i.e. ownership measured by either votes or capital. The negative impact of vote-differentiation is not significant in the estimations with institutional ownership; however, the coefficients are negative as expected. Interacting domestic institutional ownership with the dummy for vote-differentiation doubles the R^2 -values, which again proves the importance of controlling for this type of devices.

Table 6. Fixed-Effects estimation; Institutional Owners' Vote Rights (IV) controlling for Vote-Differentiation

Dependent variable: ($M_t - M_{t-1}$)/ M_{t-1}	Linear	Linear with Votedifferentiation	Quadratic	Quadratic with Votedifferentiation
Constant. δ	-0.085* (-3.46)	-0.084* (-3.39)	-0.084* (-3.46)	-0.087* (-3.52)
I_t/M_{t-1}	0.666* (13.39)	0.664* (13.23)	0.602* (10.69)	0.610* (10.63)
IV	0.004 (1.11)	0.003 (0.63)	0.020* (2.64)	0.025* (2.45)
IV^2	-	-	-0.0005* (-2.40)	-0.0006** (-2.33)
IV interacted with VoteDifferentiation dummy	-	0.002 (0.37)	-	-0.0086 (-0.74)
IV^2 interacted with VoteDifferentiation dummy	-	-	-	0.0003 (0.75)
Average q_m	0.670	0.717	0.824	0.751
R^2	0.217	0.479	0.242	0.484
F-value	13.28	12.96	13.21	12.60
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 1 percent level, ** at 5 percent significance level,

*** at 10 percent significance level

Table 5 and 6 also show the estimated effect of vote-differentiate shares. It has been shown that the separation of cash-flow rights and control rights alters the incentive of owners and thereby affects investment decisions negatively (Bjuggren, et al., 2007). We test this impact again by including an interaction term with the dummy for vote-differentiation. The result of this additional test of the effect from a separation of control and cash-flow rights support earlier findings, and indicate that firms with vote-differentiated shares have a lower investment performance (H3). In Table 6, the average firm with an institutional vote-share of on average around 10 per cent ($IC_{average}=10.65$), without vote-differential, has a marginal q of 0.808. This indicates a somewhat inferior investment performance and a return on investments below the cost of capital. The effect of domestic institutional ownership in terms of votes is however positive. With the same level of institutional ownership but for a firm with vote-differentiation the average marginal q is 0.751, noticeably below 0.808 and also below 1, which means over-investment vis-à-vis the shareholders, and a return on investments below the cost of capital. This result consequently support the proposed inferior investment performance associated with the increasing agency problems, due to entrenchment of ownership as expected from hypothesis 3.

The results for the estimation of foreign ownerships' impact on performance and its functional form are given in Tables 7 and 8. These results are in line with those found for institutional ownership, which maintain the assumption that foreign and institutional owners are in fact very similar.

Table 7. Fixed-Effects estimation; Foreign Owners' Capital Share (FC) controlling for Vote-Differentiation

Dependent variable: ($M_t - M_{t-1}$)/ M_{t-1}	Linear	Linear with Votedifferentiation	Quadratic	Quadratic with Votedifferentiation
Constant. δ	-0.079* (-3.24)	-0.078* (-3.20)	-0.076* (-3.15)	-0.102* (-4.08)
$I_t/M_{t-1} \cdot q_m$	0.624* (10.90)	0.612* (10.53)	0.525* (7.26)	0.633* (8.10)
FC	0.003*** (1.84)	0.002 (1.06)	0.014* (2.74)	0.019* (2.85)
FC ²	-	-	-0.0002** (-2.23)	-0.0003* (-3.03)
FC interacted with VoteDifferentiation dummy	-	0.003 (1.22)	-	-0.0245* (-3.48)
FC ² interacted with VoteDifferentiation dummy	-	-	-	0.0005* (3.86)
Average q_m	0.688	0.720	0.752	0.607
R ²	0.240	0.482	0.252	0.497
F-value	13.38	13.12	13.27	13.28
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 1 percent level, ** at 5 percent significance level,

*** at 10 percent significance level

Table 8. Fixed-Effects estimation; Foreign Owners Vote Rights (FV) controlling for Vote-Differentiation

Dependent variable: ($M_t - M_{t-1}$)/ M_{t-1}	Linear	Linear with Votedifferentiation	Quadratic	Quadratic with Votedifferentiation
Constant. δ	-0.081* (-3.35)	-0.082* (-3.40)	-0.085* (-3.55)	-0.097* (-3.96)
$I_t/M_{t-1} \cdot q_m$	0.606* (11.66)	0.593* (11.38)	0.486* (8.20)	0.534* (8.57)
FV	0.005* (2.97)	0.003 (1.41)	0.025* (4.88)	0.025* (4.03)
FV^2	-	-	-0.0003* (-4.09)	-0.0003* (-3.89)
FV interacted with VoteDifferentiation dummy	-	0.0068* (2.54)	-	-0.0130*** (-1.72)
FV^2 interacted with VoteDifferentiation dummy	-	-	-	0.0003** (2.26)
Average q_m	0.699	0.777	0.922	0.759
R^2	0.247	0.490	0.274	0.504
F-value	13.63	13.58	13.81	13.64
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 1 percent level, ** at 5 percent significance level,

*** at 10 percent significance level

The results for foreign ownership again confirm hypothesis 3 that the use of vote-differentiated shares lower the performance of firms. This effect is probably due mainly to the agency conflicts that arise from the additional separation of ownership and control in these firms (H4).¹⁰

Since foreign owners can be assumed to mainly be composed of institutional investors, it is finally appropriate to analyse the combined effect of domestic institutional and foreign owners. This is done by summarizing the domestic institutional and foreign ownership. The results for these estimations are found in Table 9 and 10.

¹⁰ As robustness test we have also regressed domestic institutional and foreign ownership and dual-class shares on Tobin's average q (measured as market-to-book ratio), controlling for sales and growth of sales. Their results corroborate our findings. Dual-class shares have a significant negative effect on Tobin's average q, divergence between C1 and V1 is negative and institutional investors have a positive but marginally diminishing effect on Tobin's q. The results are thus consistent with our findings above. The results with Tobin's q can be obtained from the authors upon request.

Table 9. Fixed-Effects estimation; Domestic Institutional and Foreign Owners' Capital Share (IC) controlling for Vote-Differentiation

Dependent variable: ($M_t - M_{t-1}$)/ M_{t-1}	Linear	Linear with VoteDifferentiation	Quadratic	Quadratic with VoteDifferentiation
Constant. δ	-0.081* (-3.34)	-0.080* (-3.29)	-0.079* (-3.27)	-0.098* (-3.97)
I_t/M_{t-1}	0.592* (8.78)	0.587* (8.65)	0.488* (4.96)	0.566* (5.63)
IC + FC	0.003** (1.96)	0.003 (1.40)	0.011** (1.99)	0.018* (2.86)
$(IC + FC)^2$	-	-	-9.5e-05 (-1.46)	-0.0002* (-2.95)
$(IC + FC)$ interacted with VoteDifferentiation dummy	-	0.001 (0.64)	-	-0.0169* (-3.10)
$(IC + FC)^2$ interacted with VoteDifferentiation dummy	-	-	-	0.0003* (3.39)
Average q_m	0.698	0.729	0.759	0.731
R^2	0.481	0.481	0.483	0.492
F-value	13.24	13.09	13.16	13.04
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 1 percent level, ** at 5 percent significance level,
*** at 10 percent significance level

Table 10. Fixed-Effects estimation; Domestic Institutional and Foreign Owners' Vote Rights (IV) controlling for Vote-Differentiation

Dependent variable: ($M_t - M_{t-1}$)/ M_{t-1}	Linear	Linear with VoteDifferentiation	Quadratic	Quadratic with VoteDifferentiation
Constant. δ	-0.085* (-3.52)	-0.084* (-3.47)	-0.088* (-3.68)	-0.100* (-4.09)
I_t/M_{t-1}	0.574* (10.04)	0.559* (9.72)	0.444* (6.31)	0.499* (6.85)
IV + FV	0.005* (3.18)	0.003** (1.96)	0.019* (4.03)	0.021* (3.92)
(IV + FV) ²	-	-	-0.0002* (-3.13)	-0.0003** (-3.62)
(IV + FV) interacted with VoteDifferentiation dummy	-	0.004** (2.00)	-	-0.011** (-1.97)
(IV + FV) ² interacted with VoteDifferentiation dummy	-	-	-	0.0003* (2.55)
Average q_m	0.721	0.765	0.830	0.793
R ²	0.486	0.489	0.494	0.501
F-value	13.69	13.53	13.79	13.48
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 1 percent level, ** at 5 percent significance level,

*** at 10 percent significance level

In all cases we have also tested for cubic specifications of the regression models. These estimation results have however been found to be insignificant and thus not reported. The results in all six tables are in fact remarkably stable with respect to the structural form of the model.

On average our estimated marginal q 's are in the range 0.7 to 0.8, and all our results are consistent with hypothesis 1, 2, and 3. Consequently, a positive but marginally diminishing effect of domestic institutional and foreign ownership is found. This positive effect disappears in firms with disproportional equity structure.

Our results also indicate a clear direction of causality: institutional investors improve investment performance. Reversed causality would imply that institutional investors are attracted to firms that are making superior investment decisions. In this case one would expect a linear relationship between the fraction of shares held by institutions and marginal q . The non-linear effect of institutional ownership and performance is therefore only consistent with the proposition that investors affect investment behaviour. Naturally, this argument is further supported by the fact that we observe two distinct effects in firm with proportional ownership and firm with dual-class shares.

Conclusions

Institutional owners, often associated with low control incentives, can be argued to have a disciplining effect on controlling owners and managers. Consequently, a positive relationship between institutional ownership and firm performance can be expected. In this paper we examine how institutional owners affect firm performance. We look at both domestic institutional and foreign owners. The reason that we use foreign owners in addition to domestic institutional owners is that this ownership category is primarily composed of institutional owners and can therefore be expected to behave in the same fashion as domestic institutional owners. As performance measure we use marginal q that measures the returns on investment relative to the cost of capital. This performance measure also alleviates the problems associated with average measures of performance, such as endogeneity and reversed causality.

By utilizing a fixed-effects model which accounts for time and industry effects we find that both domestic institutional and foreign ownership have a positive and marginally diminishing effect on firm performance. The results confirm a non-linear relationship between ownership and performance. The results are also robust when testing the combined effect of domestic institutional and foreign ownership. Foreign investors are predominantly also institutional investors.

Examining Swedish firms also allows us to control for the effect of vote-differentiated shares. When firms have vote-differentiated shares the positive effect associated with domestic institutional and foreign ownership disappears. This is in line with agency-cost theory, which suggests that the agency-costs are substantially higher in this type of firms. As most studies on the impact of ownership structure on firm performance are done on Anglo-Saxon data, this paper adds to the existing debate regarding the effects of this type of control instruments.

Domestic institutional and foreign owners' are found to have a positive but non-linear effect on performance. This is a clear indication of the direction of causality. It has been suggested that institutional investors have relatively higher ownership stakes in certain firms because they are attracted to firms with an already superior performance. Our results are however consistent with the view that these investors in effect influence investment behaviour positively. This result is further supported by that fact that this positive effect loses significance in firms controlled by dual-class shares.

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Appendix 1, Table 4. Correlation matrix

	Sales	$M_t - M_{t-1}$	I_t / M_{t-1}	C1	V1	FC	FV	IC	IV	V1 - C1	FC+IC	FV+IV	VoteDiff
Sales	1.00												
$M_t - M_{t-1} / M_{t-1}$	-0.059	1.00											
I_t / M_{t-1}	-0.017	0.614*	1.00										
C1	-0.112*	0.016	0.043	1.00									
V1	-0.023	0.019	0.100*	0.764*	1.00								
FC	0.241*	0.046	-0.025	-0.118*	-0.170*	1.00							
FV	0.072	0.053	-0.024	-0.058	-0.219*	0.928*	1.00						
IC	0.205*	-0.057	-0.005	-0.200*	-0.130*	-0.044	-0.036	1.00					
IV	0.232*	-0.046	-0.009	-0.212*	-0.281*	0.020	0.036	0.894*	1.00				
V1 - C1	0.174*	-0.021	0.064	-0.112*	0.385*	-0.064	-0.154*	0.049	-0.151*	1.00			
FC+IC	0.320*	0.063	-0.080*	-0.220*	-0.220*	0.830*	0.883*	0.520*	0.515*	-0.075	1.00		
FV+IV	0.171*	0.080*	-0.092*	-0.157*	-0.323*	0.812*	0.812*	0.388*	0.500*	-0.317*	0.911*	1.00	
VoteDiff.	0.175*	-0.023	0.002	-0.009	0.386*	-0.062	-0.151*	0.049	-0.185*	0.659*	-0.026	-0.203*	1.00

* indicates significance at 5 percent level